

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 10/759,281

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A method of making a metallic shell for a spark plug, the metallic shell including a multi-stepped through hole, an intermediate tubular portion, a tip end side tubular portion disposed on a tip end side of the intermediate tubular portion and a base end side tubular portion disposed on a base end side of the intermediate tubular portion, the through hole including, in the order from a base end side to a tip end side of the spark plug, a large diameter hole section, an intermediate diameter hole section smaller in diameter than the large diameter hole section and a small diameter hole section smaller in diameter than the intermediate diameter hole section, the method comprising the steps of;

cutting a metal pipe that is used as a starting material to a predetermined length and thereby preparing a pipe-shaped blank; and

subjecting the blank to a deformation process and thereby forming the blank into the metallic shell

wherein the deformation process is extrusion, and an inner diameter of the pipe is equal to a diameter of one of the large diameter hole section, the intermediate diameter hole section and the small diameter hole section.

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2. (original): A method according to claim 1, wherein an inner diameter of the pipe is larger than a diameter of the small diameter hole section and smaller than a diameter of the large diameter hole section.

3. (original): A method according to claim 1 wherein an inner diameter of the pipe is equal to a diameter of the small diameter hole section.

4. (original): A method according to claim 1, wherein an outer diameter of the pipe is larger than that of the tip end side tubular portion of the metallic shell and smaller than that of the intermediate tubular portion.

5. (original): A method according to claim 1, further comprising:
after the step of cutting, a second step of forming by extrusion a tip end side portion of the blank into the tip end side tubular portion smaller in outer diameter than the blank;
a third step of processing a base end side of the blank by extrusion to partially expand a through hole of the blank and thereby forming the large diameter hole section;
a fourth step of processing the base end side of the blank by extrusion and thereby forming the base end side tubular portion that is smaller in outer diameter than the blank while at the same time forming the intermediate tubular portion; and
a fifth step of processing the base end side of the blank by extrusion to partially expand the through hole of the blank and thereby forming the intermediate diameter hole section while at the same time forming the small diameter hole section.

6. (original): A method according to claim 1, further comprising:

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after the step of cutting, a second step of forming by extrusion a tip end side portion of the blank into the tip end side tubular portion smaller in outer diameter than the blank;

a third step of processing a base end side of the blank by extrusion to partially expand a through hole of the blank and thereby forming the large diameter hole section;

a fourth step of processing the base end side of the blank by extrusion to partially expand the through hole of the blank and thereby forming the intermediate diameter hole section while at the same time forming the small diameter hole section; and

a fifth step of processing the base end side of the blank by extrusion and thereby forming the base end side of the blank into the base end side tubular portion smaller in outer diameter than the blank while at the same time forming the intermediate tubular portion.

7. (original): A method according to claim 1, wherein a final shape of the metallic shell is of such dimensions that a length L from an end face of the intermediate tubular portion to a tip end face of the tip end side tubular portion exceeds 19 mm.

8. (original): A method according to claim 1, wherein the final shape of the metallic shell is of such dimensions that a tip end diameter D of the tip end side tubular portion is less than 10.5 mm.

9. (original): A method according to claim 1, wherein a final shape of the metallic shell is sized so that an axial length T of the small diameter hole section exceeds 2 mm.

10. (canceled).

11. (canceled).

12. (canceled).